

CLAIMS

What is claimed is:

- 1 1. A material processing system comprising:
2 a preheating station to heat a powdered material to a predetermined temperature,
3 the predetermined temperature being below the melting point of the powdered material;
4 and
5 a processing station to process the preheated powdered material, the preheated
6 powdered material facilitating at least one of improved cycle time of the processing
7 station, improved quality of a finished product, and decreased operation cost of the
8 processing station.
- 1 2. The material processing system of claim 1, wherein the processing station is a
2 rotomolding station.
- 1 3. The material processing system of claim 1, wherein the processing station is an
2 extrusion station.
- 1 4. The material processing system of claim 1, wherein the processing station is a
2 molding station.
- 1 5. The material processing system of claim 1, wherein the powdered material is
2 plastic.
- 1 6. The material processing system of claim 1, wherein the powdered material is
2 metal.
- 1 7. A powder preheating system comprising:

2 a first heated tube having an auger screw for moving a powdered material through
3 the first heated tube while heating the powdered material to a predetermined temperature;
4 and
5 a hopper coupled to the first heated tube and staged for dispensing the heated
6 powdered material.

1 8. The powder preheating system of claim 7, further comprising a second heated
2 tube coupled to the first heated tube to facilitate recirculating the powdered material
3 between the first and second heated tubes.

1 9. The powder preheating system of claim 8, wherein the first and second heated
2 tubes are heated via first and second water jackets having heated water flowing
3 therethrough, the first and second water jackets substantially surrounding a circumference
4 of the first and second heated tubes.

1 10. The powder preheating system of claim 9, wherein the first and second water
2 jackets are baffled to facilitate even distribution of the water around the circumference of
3 the first and second heated tubes.

1 11. The powder preheating system of claim 8, further comprising a third tube coupled
2 to the first and second heated tubes to store the powdered material.

1 12. The powder preheating system of claim 11, wherein the first, second, and third
2 tubes are coupled via a horizontal auger screw, the horizontal auger screw employed to
3 move the powdered material between the first, second, and third tubes.

1 13. The powder preheating system of claim 12, wherein the horizontal auger screw
2 includes a flight restrictor on a portion of the horizontal auger screw to control an amount
3 of powdered material moving between the first, second, and third tubes.

- 1 14. The powder preheating system of claim 11, further comprising a normally closed
2 gate coupled to a bottom portion of the third tube.
- 1 15. The powder preheating system of claim 11, wherein the third tube is heated via a
2 water jacket substantially surrounding the third tube.
- 1 16. The powder preheating system of claim 11, further comprising a vacuum
2 conveyor coupled to a top portion of the third tube to draw the powdered material from a
3 storage container into the third tube.
- 1 17. The powder preheating system of claim 11, further comprising a sensor located in
2 the third tube to sense when the powdered material is at or below a predetermined level.
- 1 18. The powder preheating system of claim 8, further comprising a sensor located in
2 at least one of the first and second heated tubes to sense when the powdered material is at
3 or below a predetermined level.
- 1 19. The powder preheating system of claim 7, further comprising a vibration chute
2 coupled to the hopper to facilitate flow of the powdered material from the hopper.
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- 1 20. The powder preheating system of claim 7, further comprising a first scale to
2 measure an amount of powder to be colored.
- 1 21. The powder preheating system of claim 20, further comprising a second scale to
2 measure an amount of powdered material dispensed from the hopper.
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- 1 22. The powder preheating system of claim 7, further comprising a scale to measure
2 an amount of powdered material dispensed from the hopper.
- 1 23. The powder preheating system of claim 7, further comprising a mixer to mix a
2 pigment with the powdered material.

1 24. The powder preheating system of claim 23, further comprising a pigment
2 receptacle to meter an amount of pigment into the mixer.

1 25. The powder preheating system of claim 7, wherein a portable electronic device is
2 employed to operate the system.

1 26. A powder preheating system comprising:
2 at least one heated tube for heating powdered material flowing through the tube;
3 means for feeding the powdered material from a storage bin to the at least one
4 heated tube; and
5 means for dispensing the heated powdered material from the at least one heated
6 tube.

1 27. The powder preheating system of claim 26, further comprising means for coloring
2 the powdered material.

1 28. A control system for a vibratory feeder comprising:
2 a USB hub;
3 at least one serial board coupled to the USB hub, the serial board operable to
4 provide communication with a scale; and
5 a DIO board coupled to the USB hub and operable to control at least one vibrator.